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**REMARKS**

The Office action dated September 8, 2004 and the cited reference have been carefully considered.

**Status of the Claims**

Claims 1-36 are pending in the current prosecution. Claims 37-73 were earlier withdrawn from consideration pursuant to an election requirement. Therefore, claims 1-36 remain in the current prosecution.

Claims 1, 2, 6-9, and 17-26 are rejected under 35 U.S.C. § 102(b) as being anticipated by Furuki et al. (U.S. Patent 5,411,709; hereinafter "Furuki"). Claims 5, 10-16, and 31-36 are rejected under 35 U.S.C. 103(a) as being unpatentable over Furuki in view of Ebersole et al. (U.S. Patent 5,576,279; hereinafter "Ebersole"). Claims 26-30 are rejected under 35 U.S.C. 103(a) as being unpatentable over Furuki in view of Ebersole and further in view of Friedman et al. (U.S. Patent 5,547,877; hereinafter "Friedman"). The Applicants respectfully traverse these rejections for the reasons set forth below.

**Claim Rejection Under 35 U.S.C. § 102(b)**

Claims 1, 2, 6-9, and 17-26 are rejected under 35 U.S.C. § 102(b) as being anticipated by Furuki. The Applicants respectfully traverse this rejection because Furuki does not disclose expressly or inherently each and every element of claims 1, 2, 6-9 and 17-26.

"A claim is anticipated only if each and every element as set forth in the claim is found, either expressly or inherently described, in a *single* prior art reference." *Verdegaal Bros. v. Union Oil Co. of California*, 2 U.S.P.Q.2d 1051, 1053 (Fed. Cir. 1987) (emphasis added). "The identical invention must be shown in as complete detail as is contained in the . . . claim." *Richardson v. Suzuki Motor Co.*, 9 U.S.P.Q.2d 1913, 1920 (Fed. Cir. 1989) (emphasis added). "Anticipation requires the presence in a single prior art reference disclosure each and every element of the claimed invention, *arranged as in the claim*."

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*Lindemann Maschinenfabrik GmbH v. American Hoist & Derrick Co.*, 221 U.S.P.Q. 481, 485 (Fed. Cir. 1984) (emphasis added).

Furuki discloses a gas detector that comprises an organic film in which an organic dye has been incorporated originally. See; e.g., column 5, lines 11-12; column 10, lines 17-18. The organic dye produces a fluorescence or phosphorescence whether or not the gas to be detected is present. When the gas to be detected is present, the intensity of the fluorescence or phosphorescence changes, and it is this change in intensity that is measured to provide the property of the gas to be detected. See; e.g., column 3, lines 19-31; column 5, lines 10-14. The organic dye in Furuki is present as a fluorescent or phosphorescent material in the first place rather than coming into existence only as an interaction product being generated by a reaction between a reagent and the chemical species that diffuses into the film. Again, Furuki determines the amount of the species to be detected by measuring the reduction in fluorescence or phosphorescence of the organic dye that has always been present in the thin film. This is disclosed in column 9, lines 36-49: "On the basis of the foregoing relations, if the relationship between the concentration of the gas to be detected and changes of fluorescence or phosphorescence . . . , and the ratio between the intensity of fluorescence or phosphorescence from the gas sensitive thin film at the time of contact with the gas to be detected and the intensity of fluorescence or phosphorescence from the gas sensitive thin film at the time of noncontact with the gas sensitive thin film is calculated by the signal processing means, it is possible to simply output the concentration of the gas to be detected quantitatively without requiring complicated correction." (Emphasis added.)

In contradistinction, each of claims 1, 2, 6-9, and 17-26 recites the presence of at least one reagent capable of undergoing a chemical interaction with the chemical species to be detected to form an optically detectable interaction product. The interaction product (which only comes into existence in the film when the gas to be detected interacts with the reagent) modifies the incoming EM radiation by either absorbing EM radiation from the EM radiation source or emitting a different radiation. Thus, in one embodiment, the intensity of the incoming EM radiation is changed because an interaction product partially absorbs such incoming EM radiation. In another embodiment, the emission from the interaction product only comes into existence when the gas to be detected is present.

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Furuki does not disclose this limitation of the instant claims because Furuki measures a change in the intensity of emission of an organic dye at one fixed wavelength, which dye has always been in the film, and which emission at that fixed wavelength has always existed, even before the gas to be detected is present.

Therefore, Furuki does not disclose each and every limitation of each of claims 1, 2, 6-9, and 17-26. Since Furuki does not disclose each and every limitation of each of claims 1, 2, 6-9, and 17-26, Furuki does not anticipate these claims.

**Claim Rejection Under 35 U.S.C. § 103(a)**

Claims 5, 10-16, and 31-36 are rejected under 35 U.S.C. § 103(a) as being unpatentable over Furuki in view of Ebersole. The Applicants respectfully traverse the rejection because a combination of Furuki and Ebersole does not teach or suggest all of the elements of each of claims 5, 10-16, and 31-36.

"To establish *prima facie* obviousness of a claimed invention, all the limitations must be taught or suggested by the prior art." M.P.E.P. § 2143.03 (8<sup>th</sup> ed., Rev. 2, May 2004). "What must be found obvious to defeat the patentability of the claimed invention is the claimed combination." *The Gillette Co. v. S.C. Johnson & Son, Inc.*, 16 U.S.P.Q.2d 1923, 1927 (Fed. Cir. 1990).

As pointed out above, Furuki does not teach or suggest an optical property of the interaction product, which property is selected from either an absorbance of an incoming EM radiation (i.e., from an outside EM radiation source) or an emission of the newly created interaction product, as is recited in claims 5, 10-16, and 31-36. Furuki teaches only the measurement of a change in the fluorescence or phosphorescence of an organic dye that has always been in the film, whether or not the gas to be detected is present. Adding Ebersole to show an acoustic or an optical detection system still does not teach or suggest all of the elements of each of claims 5, 10-16, and 31-36. Although Ebersole discloses measuring changes in the light propagation of the analyte-responsive polymer (column 3, lines 39-40), Ebersole does not know the nature of the changes in the propagational properties (column 4, lines 27-31). Instead, Ebersole believes that the changes in the propagational properties are due to changes in visco-elasticity, rigidity, or light wave propagational abilities of the polymer (column 4, lines 29-31). Therefore, Ebersole could

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not have taught or suggested the specific optical property of an interaction product, as is recited in claims 5, 10-16, and 31-36.

Since a combination of Furuki and Ebersole does not teach or suggest all of the elements of each of claims 5, 10-16, and 31-36, these claims are patentable over Furuki in view of Ebersole.

Claims 26-30 are rejected under 35 U.S.C. § 103(a) as being unpatentable over Furuki in view of Ebersole and Friedman. The Applicants respectfully traverse this rejection because a combination of Furuki, Ebersole, and Friedman does not teach or suggest all of the elements of each of claims 26-30.

"To establish *prima facie* obviousness of a claimed invention, all the limitations must be taught or suggested by the prior art." M.P.E.P. § 2143.03 (8<sup>th</sup> ed., Rev. 2, May 2004). "What must be found obvious to defeat the patentability of the claimed invention is the claimed combination." *The Gillette Co. v. S.C. Johnson & Son, Inc.*, 16 U.S.P.Q.2d 1923, 1927 (Fed. Cir. 1990).

As pointed out above, Furuki does not teach or suggest an optical property of the interaction product, which property is selected from either an absorbance of an incoming EM radiation (i.e., from an outside EM radiation source) or an emission of the newly created interaction product, as is recited in claims 26-30. Furuki teaches only the measurement of a change in the fluorescence or phosphorescence of an organic dye that has always been in the film, whether or not the gas to be detected is present. In addition, as pointed out above, Ebersole could not have taught or suggested the specific optical property of an interaction product because Ebersole does not know the nature of the changes in the properties that were measured. Therefore, adding Friedman merely to show that Fujiwara reaction can be used to detect TCE or THMs still does not teach or suggest all of the elements of each of claims 26-30.

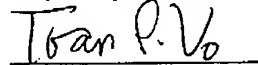
Since a combination of Furuki, Ebersole, and Friedman neither teaches nor suggests a device having all of the elements of each of claims 26-30, these claims are patentable under 35 U.S.C. § 103(a) over Furuki in view of Ebersole and Friedman.

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In view of the above, it is submitted that the claims are patentable and in condition for allowance. Reconsideration of the rejection is requested. Allowance of claims at an early date is solicited. If the Applicants can be of any assistance in advancing this application to allowance, the Examiner is invited to call the Applicants' attorney whose telephone number is indicated below.

Respectfully submitted,



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